DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 22, 2009 has been entered.

Response to Arguments

2. Applicant's arguments filed with the RCE have been fully considered but they are not persuasive.

Regarding the rejection of claim 1 over Nagai, figure 9 shows an embodiment in which output current (through R5) is monitored and the PWM of the first power transistor is controlled "on the basis of" the monitored current (col. 10, lines 11-15; col. 11, lines 7-40). One skilled in the art would recognize that during AC power failure (the battery 34 is the only power source), the current through the switch (42) and the current through the output (32 measured at R5) are equivalent for the purpose of controlling the PWM of the switch.

Regarding the rejection of claim 1 over Eng, as pointed out by the applicants, the current passing into the transistor is monitored (at 456). And the Eng PWM controller controls the transistor (453) on the basis of the monitored current. One skilled in the art would recognize that monitoring the current into the transistor (453) is equivalent to

monitoring the current flowing out of the transistor for the purpose of pulse-width modulating the transistor.

Regarding claims 6 and 12, applicants' remarks regarding the parallel diode/transistor configuration of Eng are persuasive.

Regarding claim 14, the "current limiter" is not defined in the claim. There is no physical construction or functionality (except to limit current) recited in the claim. It would be obvious that even a basic electrical component (such as a resistor) limits current to some extent. Resistance slows the flow of electrons. This could be interpreted as current limiting. For the purpose of art rejection of the claim, the "current limiter" will be interpreted as any device that would provide a lower output current than if the device was not present.

The art rejections over Nagai and Eng are rewritten as §103 rejections. And new art rejections are presented below based on Chang and Zansky. Both references were cited in the PTO-892 form supplied to applicants with Non-final Office Action of 3/18/08.

Claim Objections

3. Claim 15 is objected to because the claim recites "a third output connection 140", but applicants' figure shows that 140 is an input (arrow pointed to the left). Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang (US 6,577,513).

With respect to claim 1, Chang discloses a device for supply uninterruptible power (fig 3; col. 2-3) comprising: input connections (output of unlabeled rectifier) for connection to a primary DC voltage supply device; connections for a standby power source (15); output connections (AC output) ; a device for decoupling the input connections from the first output connections in the event of a fault in the primary DC voltage supply device (12); a first controllable switching device (19) for connecting the standby power source to the first output connections in a controlled manner in the event of a fault in the primary DC voltage supply device; and a control device (14) assigned to the first controllable switching device wherein, the first controllable switching device has a power transistor (fig 2; col. 3), a monitoring device (197) is provided for the purpose of monitoring the output current flowing through the power transistor, and the control device is designed to pulse-width-modulate the power transistor on the basis of the current being monitored in order to limit the current when can be provided by the standby power source (col. 3, lines 28-36).

With respect to claim 2, Chang discloses the standby power source is rechargeable (col. 2, lines 42-55).

With respect to claim 3, Chang discloses a device for blocking a current (17), which is provided by the primary DC voltage supply, to the standby power source, is provided in series with the first power transistor (19).

With respect to claim 4, Chang discloses a smoothing capacitor (C1, C2) connected between the output connections.

With respect to claim 5, Chang discloses a charging device (17) which can be controlled by the control device (line connecting 14 and 17) is connected between the standby power source (15) and the input (noted by "+15V").

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai (US 6,057,609).

With respect to claim 1, Nagai discloses a device for supply uninterruptible power (fig 4, 9; col. 5-6, 9-11) comprising: input connections (nodes a, d) for connection to a primary DC voltage supply device (38; col. 5, lines 46-51); connections for a standby power source (34; col. 5, lines 52-60); output connections (32; col. 6, lines 16-25) ; a device for decoupling the input connections from the first output connections in the event of a fault in the primary DC voltage supply device (33; col. 5, lines 61-67); a first controllable switching device (40) for connecting the standby power source to the first output connections in a controlled manner in the event of a fault in the primary DC voltage supply device; and a control device (36; col. 5, line 61 to col. 6, line 12) assigned to the first controllable switching device wherein, the first controllable

switching device has a power transistor (fig 5, item 42), a monitoring device (fig 9, item 58; col. 10, lines 11-15; col. 11, lines 7-40) is provided for the purpose of monitoring the output current flowing through the power transistor, and the control device is designed to pulse-width-modulate (col. 6, lines 1-12) the power transistor on the basis of the current being monitored in order to limit the current when can be provided by the standby power source (col. 3, lines 61-67; col. 11, lines 36-39).

By pulse-width-modulating the output of the standby power source, it would be obvious to one skilled in the art that Nagai limits the current that is provided. Support for this interpretation can be found in the normal operation of a PWM, which only allows the standby power source to discharge intermittently. Since the standby power source is not always discharging, its output current is lower than it would be without PWM control. This lower current is accomplished by "current-limiting." The Nagai converter connects the battery and the output and "has" a power transistor, as required by the claim. It is noted that the claim does not define the location of the first power transistor.

Nagai further discloses that the output current is monitored and the first power transistor is PWM controlled "on the basis of" the monitored current. Nagai explicitly states that the output current is used to control the PWM (col. 10, lines 11-15). Also, in the method shown in figure 10 (col. 11), Nagai states that the output current sensor could trigger the PWM controller to turn off entirely. This function also meets the broad limitation of controlling the PWM “on the basis of” the monitored current.

With respect to claim 2, Nagai does not expressly disclose the battery is rechargeable. At the time of the invention by applicants, it would have been obvious to

configure the battery as rechargeable, because otherwise, the UPS would be a one-time use device. Rechargeable batteries are well known in the art and commonly used in UPS systems.

With respect to claim 4, Nagai discloses a smoothing capacitor (C8) connected between the first output connections. During normal AC operations, the switching device (33) couples the input to the output. Thus, there are at least some times when the smoothing capacitor coupled to the input (C8) is also "connected between" the output connections.

8. Claims 1-2 and 14 -18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng (US 4,745,299).

With respect to claim 1, Eng discloses a device for supply uninterruptible power (fig 4; col. 4) comprising: input connections (404) for connection to a primary DC voltage supply device; connections for a standby power source (451); output connections (411-412) ; a device (403) for decoupling the input connections from the first output connections in the event of a fault in the primary DC voltage supply device; a first controllable switching device (453) for connecting the standby power source to the first output connections in a controlled manner in the event of a fault in the primary DC voltage supply device; and a control device (430) assigned to the first controllable switching device wherein, the first controllable switching device has a power transistor (453), a monitoring device (456) is provided for the purpose of monitoring the input current flowing through the power transistor (lines 51-54) , and the control device is designed to PWM the power transistor on the basis of the current being monitored in

order to limit the current when can be provided by the standby power source (lines 54-58).

It would be obvious to one skilled in the art that the current input to the transistor is, if not equal to, then proportional to the current output from the transistor. The two current sensing positions are equivalents for the purpose of controlling a PWM transistor.

With respect to claim 2, it would be obvious that the Eng battery is rechargeable, as discussed above.

With respect to claim 14, Eng discloses a device for supplying uninterruptible power (fig 1) comprising: input connections (+,- of rectifier 11), connection for a standby power source (12); a first output connections (Von); a device for decoupling (13) the input connections in the event of a fault in the primary DC supply; a first controllable switching device (14) for connecting the standby power source to the output in a controlled manner in the event of a fault in the primary DC supply (see art rejection of claim 1); a control device (30) which is assigned to the first controllable switching device (via 34); and a supply output (V02) which is connected in parallel with the first output connections and whose current is limited by a current limiter (rectifier and filter in the current path) resulting in a current limited supply output.

As discussed above, the recited “current limiter” has no internal structure or function (other than to limit current). Therefore, the components shown in the output current path (Vo2) are interpreted as the current limiters. Further, by pulse-width modulating the first transistor (14), the power supply from the battery is current-limited.

Therefore, it would also be obvious that any output coupled to the first transistor is also current-limited.

With respect to claim 15, it would be obvious to one skilled in the art to connect "state signaling devices" to the Eng second output connection (Vo2), since these limitations are drawn to the end use of the UPS. The UPS will function in the same way regardless of what type of load is connected to one of the outputs. It would also be obvious that these state-signaling devices comprise their own controllable switching device, since it is well known in the art that electronics include on/off switches.

Further, Eng discloses two outputs. At the time of the invention by applicants, it would have been obvious to one skilled in the art to add another output, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 (CCPA 1977). Lastly, as shown in figure 1 (and obvious to anyone building the UPS), the outputs are physically separated ("arranged at a predetermined distance"). It would not be possible to construct two outputs in the same exact location.

With respect to claim 16, it would be obvious to one skilled in the art that if two outputs are shorted, they will provide exactly the same voltage. Therefore, it would be obvious to one skilled in the art to use "a predefined contact bridge" in the second Eng output (Vo2) in order to supply power to two loads at the same voltage. The ability to duplicate output ports is well known in the art, and Eng provides the motivation to supply power to more than one load.

With respect to claims 17-18, it would be obvious that the Eng switch (13) and a relay/switchover relay are art recognized equivalents for the purpose of making/breaking electrical contact to complete/break a current path from a source to an output.

9. Claims 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng in view of Zansky (US 7,034,413).

With respect to claim 6, Eng disclose that the device for decoupling is a solitary transistor (13). Zansky discloses a UPS (fig 1-2; col. 2-3) comprising an input (fig 2, Vin), a backup source (245), an output (Vout), a device for decoupling (215), and a first controllable switching device (250). Zansky disclose that the device for decoupling is a parallel connection of a diode and a controllable switching device (215), a monitoring device to monitor an input voltage (V1), and the control device (220) disconnects the second controllable switching device when the input voltage being monitored signals a fault in the primary supply device (col. 2, line 65 to col. 3, line 1).

Eng and Zansky are analogous because they are from the same field of endeavor, namely UPS systems. At the time of the invention by applicants, it would have been obvious to replace the Eng transistor with the Zansky transistor/diode circuit, since it is well known in the art that transistors contain intrinsic diodes.

With respect to claim 7, Eng (13) and Zansky (215) disclose that the second controllable switching device is a second power transistor. Although Zansky shows a FET, the reference states that it would be obvious to use another type of transistor, such as the BJT disclosed in Eng.

With respect to claims 8-11, Eng discloses a second current-limited output, as discussed above in the rejection of claims 14-17.

With respect to claims 12-13, Eng and Zansky disclose the recited limitations, as discussed above in the rejections of claims 1 and 6-7.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is noted that the following references (either cited in the enclosed PTO-892 form or the form supplied on 3/18/08) show parallel diode/transistor circuits. They support the interpretation that some circuit schematics shown intrinsic diodes, while others do not. Where drawn or not, one skilled in the art would recognize that the diode is always there. See Okui (US 7,166,931), Batson (US 6,400,043), Hisanaga (US 5,886,880), Gocho (US 4,131,829), Muelleman (US 5,666,255), Gold (US 5,801,937), Reilly (US 6,400,591), among others.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADI AMRANY whose telephone number is (571)272-0415. The examiner can normally be reached on Mon-Thurs, from 10am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Stephen W Jackson/
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